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Improving Intergroup Relations through Actual and Imagined Contact: Field Experiments with Malawian Shopkeepers and Chinese Migrants

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I. Introduction

The past decade has seen a massive influx of Chinese migrants into sub-Saharan Africa, among them many traders and shopkeepers, competing among local merchants. These small-scale Chinese entrepreneurs have often been met with resistance from the local competition, resulting in a sharp social divide. Chinese migrant shopkeepers and their local counterparts are shaped by fundamentally different cultures. These cultural differences inform distinct social identities, which in turn inform diverse and divergent sets of business practices. Frictions stemming from these divergent practices and related access to different business networks, and the consequent loss in economic efficiency, make the study of social identity especially critical in this context.

Social identity is a person's sense of self, derived from social group membership, where the social group can be defined in various ways, for example, ethnicity, gender, occupation, or religious affiliation (Chen 2010). Although social

identity has been shown to generate many positive economic benefits within social groups, it can also lead to negative economic outcomes between groups. Identity-based favoritism can produce myriad problems that impede economic progress. In particular, identity-based favoritism can result in discrimination against and stereotyping of members of a group simply on the basis of their group membership. Ethnic divisions can lower productivity (Hjort 2014), impede social integration of migrant communities from ethnic out-groups (Casey and Dustmann 2010), and generate ethnic conflict (Easterly 2001) and ethnic-based religious intolerance (Alesina, Baqir, and Easterly 1999).

Economists have only recently started to recognize that it is not only important to measure such biases but also to implement strategies to address prejudice grounded in social identity (Ben-Ner et al. 2009; Fryer and Loury 2013).[1] In this paper, we report the results of three framed field experiments that test whether one such strategy—namely, promoting "pleasant and cooperative contact" (Hewstone and Brown 1986)—is effective in reducing prejudice between two groups, Malawian entrepreneurs and Chinese migrant entrepreneurs, in Malawi.

Our contribution is twofold: We develop a simple theoretical framework that sets out alternative predictions about how contact might affect attitudes toward and willingness to spend time with members of the other group depending on whether the dominant form of discrimination is based on preference or information bias. We then employ three randomized experiments to test the predictions of the model, enabling us to distinguish between the two alternative channels through which contact might mitigate prejudice. In the first and second studies, we test the effect of actual contact on the attitude of Malawians toward the Chinese and the willingness of Malawians to spend time with the Chinese, and vice versa. In the third experiment, we employ the notion of imagined contact to test whether Malawian shopkeepers, who imagine contact in a pleasant and cooperative setting with their Chinese counterparts, report a more positive attitude toward them and are more willing to spend time with them. Note that we did not include Chinese migrants in the imagined contact study because of the particularly small pool of potential participants and the greater ex ante emphasis on the ability of intergroup contact to influence the in-group (Malawian entrepreneurs) than the out-group (Chinese migrant entrepreneurs; Tropp and Pettigrew 2005).

To test the persistence of the experimental effects over time, for all three experiments, we conduct telephone follow-ups with participants 10 days after

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[1] See Lowes et al. (2015) for an example from the economics literature of a test that measures implicit bias toward ethnic out-groups.

the experiment, at which time we resurvey them regarding their attitude toward and willingness to spend time with the other group. Persistence of attitudinal and behavioral responses has been rarely addressed in the contact hypothesis literature. One exception is Enos (2014), who performed a randomized controlled experiment in which Spanish-speaking confederates were randomly assigned to be inserted, for a period of days, into the daily lives of Anglo whites living in homogenous communities in the United States, thus simulating demographic change. Enos randomly surveyed community members at T + 3 days and then again at T + 10 days following the introduction of confederates. He found that exclusionary attitudes were stronger for those surveyed 3 days after the treatment than for those surveyed 10 days after the treatment.

We find asymmetries in the manner in which the Chinese and Malawians respond to the same treatment in the actual contact study, which has not been documented before. Specifically, we find that actual contact facilitates a behavioral response in Malawian shopkeepers toward their Chinese counterparts but no attitudinal change. At the same time, we find that actual contact facilitates an attitudinal change in Chinese shopkeepers toward their Malawian counterparts but no behavioral response. We find that the positive effects due to the actual contact interventions persist for at least 10 days. We also find that imagined contact has no effect on Malawian attitudes toward or willingness to spend time with the Chinese. Guided by our theoretical framework, we are then able to offer some insights—based on these empirical results—on whether the dominant form of intergroup discrimination is preference based or stems from informational bias. A combination of preference- and information-based channels explains our results for how the Chinese respond to the treatment in terms of our model. Both channels explain Malawians wanting to spend more time with the Chinese, but the preference channel is not able to predict Malawians' lack of attitude change.

In the following paragraphs, we place our findings in the context of the broader literature and discuss them in more detail against this backdrop. The contact hypothesis, first formulated by Allport (1954), states that intergroup contact that is pleasant and cooperative (Hewstone and Brown 1986) can reduce prejudice toward the other group. Imagined contact is a more recent variation of the original contact hypothesis, proposed by Crisp and Turner (2009), which conjectures that contact in the form of an imagined interaction with an out-group can produce positive perceptions of that group. Although imagined contact has been proposed as an alternative to actual contact that—if successful—would hold enormous potential for scalability due to its low cost, existing studies show mixed results and economists have remained largely

skeptical.[2] Nonetheless, studies of related interventions via the media have been able to demonstrate the enormous potential value of imagined contact, suggesting it deserves further investigation. One such study in the economics literature by Blouin and Mukand (2017) examines the impact of a large-scale nation-building radio intervention in Rwanda on in-group bias. The intervention seeks to replace ethnic group identity with a common national identity, and their findings demonstrate positive outcomes in terms of reducing salience of ethnic identity and overcoming in-group bias.[3] Whereas Blouin and Mukand's strategy is to make use of exogenous variation in exposure to the nation-building radio exercise, our intervention asks participants to imagine engaging in a specific pleasant and cooperative task with a member of the other group, as proposed by Crisp and Turner (2009). Moreover, in contrast to Blouin and Mukand (2017), the key goal of imagined contact in our study is to overcome strong out-group prejudice while preserving participants' identity.

There are only a few studies in economics on the contact hypothesis, and most of these studies are implemented in an educational setting. Boisjoly et al. (2006); Burns, Corno, and La Ferrara (2015); and Carrell, Hoekstra, and West (2015) exploit random room assignment in college dormitories to test whether having a roommate of a different race affects attitudes toward people of that other race and willingness to cooperate with people of that other race. These studies find that living with a roommate from a different race reduces prejudice toward people from that other race and increases willingness to interact with them socially. Rao (2013) examines, in the context of students of different economic backgrounds in Indian classrooms, whether mutual exposure changes the attitude of rich students toward impoverished students. He finds that economically diverse classrooms cause wealthy students to discriminate less against poor students outside of school. One study that is not conducted in an educational setting is Scacco and Warren (2015), who examine intergroup contact between Christians and Muslims in Nigeria. They find that a grassroots-level intervention that induces contact between the two groups has little effect on intergroup prejudice in its cognitive (attitudinal) form but can

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[2] This skepticism is shared by some social psychologists (see Dermody, Jones, and Cumming 2013; McDonald et al. 2014). Turner and Crisp (2010) themselves have acknowledged that imagined contact might not be as powerful as face-to-face contact, given that actual experiences produce stronger attitudes than indirect experiences (Stangor, Sullivan, and Ford 1991). They further state that, in many circumstances, imagined contact alone might not be enough to have a positive effect; in such situations, they suggest that a continuum of contact strategies may be needed (Crisp and Turner 2012).
[3] There are other similar studies in the social psychology literature. For example, Paluck (2009) found some evidence that radio soap operas have the potential to act as a vehicle for conflict prevention in Rwanda.

lead to behavioral change in the form of increased generosity and increased co-operative behavior in the short term.

Compared with existing studies on this topic in economics, our contribution provides evidence for the contact hypothesis among adults (most existing studies are for children in schools or adolescents in college) in a developing country setting (most existing work is not, although Rao 2013 and Scacco and Warren 2015 are exceptions). Beyond this, there are several aspects of our particular context that are unique. In contrast to Scacco and Warren, who test the contact hypothesis for two groups—Christians and Muslims—who have a long-standing religious conflict, in our case the conflict is much more recent and it is in the context of a business setting. Our study has some similarities to that of Enos (2014), but we differ from it in important ways. In particular, Enos does not study a business context, and in contrast with Chinese immigration to Africa, Hispanic immigration to the United States is not new. In addition, Enos studies exclusionary attitudes and behavioral change, whereas we focus on whether contact can bring about inclusionary attitudes and behavioral change. As such, our focus has greater potential to inform interventions to address prejudice.

An advantage of studying contact in a business context over an educational setting is that in the former, because both groups are focused on making profit, how one group views the other is likely to explicitly depend on the change in net economic profits of adding a member of the other group to their network. Where two groups of entrepreneurs differ in the extent to which they can add value to each other's networks, this may produce differences in willingness to engage with each other. As discussed below, this is likely to be the case in Malawi. In contrast to the business context, in a classroom setting, it is unlikely that attitudes and behavior toward members of the other group would depend on the marginal net profits of adding a member of the other group to one's network, or at least one would not expect such a consideration to be as salient in a classroom setting. We exploit the asymmetries in the net economic benefits that one group of entrepreneurs can bring to the other in a commercial context in setting up our conceptual framework. To the best of our knowledge, thinking about how contact influences attitude and behavioral responses in this way is novel in the literature.

We now describe in more detail the economic mechanisms underlying our theoretical framework and link them to the assumptions that we make about the decision-making environment of the agents. We view the entrepreneurs in our study as facing a decision as to whether to add a member of the other group to their network. We assume that this decision is made on the basis of the expected marginal net economic benefit, which, in turn, is based on

two considerations. The first is the marginal profit to one's business of adding a member of the other group to one's network. The second is a cost estimate of adding a member of the other group to one's network. With respect to the marginal profit to one's business of adding a member of the other group to one's network, there is an important, preexisting asymmetry in our context. Both groups recognize that the Chinese have access to supply chains that provide a greater variety of products at cheaper prices.[4] In Malawi, as in the rest of sub-Saharan Africa, the local entrepreneurs are envious of the business networks enjoyed by their Chinese migrant competitors. Although this has been a point of contention between the two groups—local Malawian shopkeepers have accused their Chinese competitors of having an "unfair advantage" due to their business networks (Warmerdam and van Dijk 2017)—the local entrepreneurs clearly see that adding Chinese entrepreneurs to their networks would open new business opportunities. For their part, the local Malawian entrepreneurs cannot provide the same net benefits to their Chinese counterparts. Consequently, in our theoretical framework, we assume that the benefit to a Malawian from adding a Chinese migrant to their business network is greater than the benefit to a Chinese migrant from adding a Malawian to their network. This assumption is well founded in the empirical literature. Scholars studying small entrepreneurs have long identified that personal and local networks are crucial to a venture's success (Birley 1985; Dubini and Aldrich 1991; Brüderl and Preisendörfer 1998). In the context of Chinese business migrants in sub-Saharan Africa, numerous studies document that Chinese networks play a key role in the success of Chinese businesses in sub-Saharan Africa, that local Chinese entrepreneurs have much more extensive networks than local entrepreneurs, and, furthermore, that such networks give them an important competitive advantage over local entrepreneurs (see, e.g., Geda 2008; Baah and Jauch 2009; Dobler 2009; Gadzala 2010).

Our theoretical model allows us to predict the effects of contact on intergroup relations via two different channels through which contact might mitigate

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[4] Though not crucial to our model, a further reason to believe the additional value of adding Chinese to Malawian business networks might lie in the possibility of adopting elements of Chinese work culture. Indeed, local entrepreneurs in sub-Saharan Africa are acutely aware of the potential benefits from adopting work ethics, business skills, and technical skills from their Chinese migrant counterparts (see, e.g., McNamee et al. 2012 for a discussion on this point in the context of Lesotho). From the perspective of the Chinese, the perception of stark difference between Chinese and local traders' work culture is reflected in the fact that, for their part, Chinese traders feel misunderstood and singled out within their host nation. For example, in a survey-based study of Chinese private traders in South Africa, Lesotho, Botswana, Zambia, and Angola, McNamee et al. (2012) found that Chinese traders pride themselves on their work ethic and believe that their mind-set is neither understood nor appreciated by their African customers or competitors.

prejudice between the two groups and that are linked to two distinct forms of biases against members of the other group: preference-based and information-based discrimination. Whereas preference-based discrimination describes discrimination against a person based on their traits and characteristics, such as belonging to a particular group of individuals, information-based, or statistical, discrimination describes the phenomenon whereby, in the absence of information about an individual, group averages are projected onto that individual; that is, discrimination against a member of an out-group is due to imperfect information (Phelps 1972).[5]

In our model, we derive the following two main predictions for actual contact: First, if preference-based discrimination is dominant, Malawians' attitude toward the Chinese and the Chinese attitude toward the Malawians will improve. Our assumption of asymmetry in the marginal net benefits of adding a member of the other group to an individual's business network implies that a positive impact on the attitudes of the Malawians will increase their willingness to spend time with a Chinese migrant but that the reverse may not hold. Second, if contact mitigates prejudice mainly via the information channel, we would expect to observe no improvement in the attitudes of participants post-contact. Instead, the model predicts behavioral changes: On the one hand, Malawians will wish to spend more time with the Chinese as they update their estimate of the cost of forming a business connection with a Chinese entrepreneur, as there is profit to be gained from forming such a connection. On the other hand, the Chinese will not want to spend any more time with the Malawians, as independent of any potential revision of the estimated cost, there is too little positive marginal profit to be gained from adding a Malawian to their business network to make networking worthwhile.

If the dominant influence of imagined contact is via its effect on general attitude toward the other group, we would expect local Malawian shopkeepers' attitude toward Chinese migrants to improve, albeit likely more weakly than actual contact. Meanwhile, we predict no increase in willingness to spend time with the Chinese. However, unlike actual contact, imagined contact does not provide participants with new information on members of the other group but rather projects preexisting prejudices in terms of the difficulty in establishing new contacts. Thus, if contact operates via the information channel, we

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[5] As Bertrand and Duflo (2016) note, limited information that drives statistical discrimination might be itself endogenous to conscious or unconscious discrimination against out-group members. That is, if one has a social need to positively associate with one's own group, this may also make the other group seem more distant and make one less inclined to invest in becoming informed about specific members of the other group.

would expect imagined contact to have no effect on Malawians' willingness to spend time with the Chinese.

Taken together, a combination of information- and preference-based channels can explain why Chinese and Malawians respond differently to the same actual contact treatment. For the actual contact treatments, both channels predict asymmetry in willingness to spend time with members of the other group, although the Chinese attitude change toward Malawians posttreatment is consistent with the preference-based channel dominating, and Malawians' (lack of) attitude change toward the Chinese is consistent with the information-bias channel dominating. The finding that imagined contact has no effect on Malawians' attitudes toward or willingness to spend time with Chinese is consistent with the information channel operating. Overall, most of our findings are consistent with what we would predict if the dominant influence of contact is via an effect on mitigating informational bias between the two groups.

II. Chinese Migration to and Development of Commercial Interests in Africa

A large inflow of Chinese migrants has reshaped the economic landscape of sub-Saharan Africa. Though reliable figures are hard to come by, Sautman (2006) estimates that the number of Chinese migrants in South Africa alone grew from about 30,000 in 2001 to between 100,000 and 300,000 in 2006. This scale of foreign migration of a group with no traditional or colonial ties to Africa is unique. Apart from its scale, the Chinese diaspora in Africa is also qualitatively unique in that the Chinese, unlike other migrant populations with commercial interests, lack cultural or linguistic ties to Africa (e.g., Indian migrants in former British colonies in Africa share a common language and certain institutions with the local populace). The influx of Chinese products and the proliferation of small Chinese enterprises have had several benefits for African consumers; notably, it has led to lower prices for a range of products and greatly expanded the choice set of consumers (McNamee et al. 2012). However, in terms of relations with local entrepreneurs, it has also increased competition for local businesses.

Throughout sub-Saharan Africa, it is well documented that the local Chinese entrepreneurs often have extensive networks that are not available to their local indigenous competition. For example, Gadzala (2010) discusses the comparative advantage that Chinese entrepreneurs derive from their networks in the Zambian context, which allows them to undercut their local competition. In the Namibian context, Dobler (2009) finds that the Chinese rely on unique networks not generally available to their local competitors, as it is cheaper to import from China than to produce goods locally. Baah and Jauch (2009)

report that local Ghanaian entrepreneurs have been forced out of the market by Chinese immigrant competition, with the latter able to tap into networks that allow them to import cheaply from China instead of relying on locally manufactured goods. Geda (2008) finds, in the Ethiopian context, that some of the local indigenous traders have been successful in tapping into the networks of their Chinese migrant competitors and that these local Ethiopian entrepreneurs have been much more successful than their counterparts without such access. Geda's findings suggest that in sub-Saharan Africa there are tangible net economic benefits to the local entrepreneurs from engaging with their Chinese counterparts because it opens up business networks not otherwise available.

The fact that most local entrepreneurs in sub-Saharan Africa do not have the ability to tap into the networks of their better-connected Chinese rivals has reinforced resentment among local businesses at the sharp increase in competition and contributed to tensions between both groups of entrepreneurs. Political reactions to the Chinese presence have been mixed. Although Malawian leaders such as the late president Bingu wa Mutharika and the former president Joyce Banda have largely welcomed Chinese investment, there have also been recent laws condemned by civil rights groups as xenophobic. As an example, the Investment and Export Promotion Bill, which was enforced starting July 31, 2012, and aimed mainly at Chinese private traders, barred foreigners from carrying out trade in Malawi's rural areas (Ngozo 2012).

We conduct our studies in Lilongwe, which is the capital of Malawi. Malawi is a small landlocked country in southeast Africa with an approximate population of 16.36 million people. The Malawian economy is largely agrarian and underdiversified; tobacco accounts for the majority of its export earnings (World Trade Organization 2002). Thus, foreign investment and access to the Chinese export market have been welcome. Formal diplomatic relationships were established between China and Malawi in 2008 after Malawi severed its 41-year-old ties with Taiwan. This led to a surge in migration from China in the form of construction workers and private traders. The current size of the Chinese business community in Lilongwe, not including construction workers, is approximately 2,000.

Few studies have examined the contact hypothesis considering Chinese migrant groups. There are studies that have found that intergroup contact between adult rural-urban migrants and those with an urban *hukou* (household registration) in China is correlated with more positive attitudes toward the other group (Nielsen et al. 2006; Nielsen and Smyth 2011). Similarly, research suggests that intergroup contact between Chinese migrants in the Italian town of Prato is positively correlated with more favorable attitudes among the Chinese

migrants toward local Italian residents (Nielsen, Paritski, and Smyth 2012). A limitation of each of these studies is that because they use cross-sectional self-reported data, they are only able to establish correlation and not causation between contact and attitude change. Gu et al. (2016) used an experimental design with random treatment assignment to test the effect of intergroup contact on attitudes between a group of urban adolescents and a group of rural-urban migrant adolescents in China. Their results showed that intergroup contact in the form of completing a pleasant and cooperative task (jointly completing a fun puzzle) was effective in reducing negative attitudes toward the other group.

III. A Behavioral Model of Entrepreneurs' Social Network Extension

Our prior conjecture is that the conflict between Malawian and Chinese shopkeepers is driven by prejudice and the competitive advantages enjoyed by Chinese shopkeepers. We consider two potential sources of prejudice: preference-based and information-based bias. In the context of the entrepreneurs, we think of one's willingness to spend time with another entrepreneur as the disposition to add them to their personal network. Accordingly, we assume that this decision is made based on consideration of the net economic benefits of making this connection, expressed as

$$V_i(j \cup N_i) = \pi_i(j \cup N_i) - c_i(\hat{N}_{ij}, A_{iJ}). \tag{1}$$

The personal network of an individual who is a member of group i is denoted N_i. The extension of i's network to include an individual from group j is denoted $j \cup N_i$. We assume that the value of i's personal network is its contribution to the profitability, that is, marginal profit, of i's enterprise. This contribution is calculated by the function π_i. There is a preexisting asymmetry in our context. Both groups recognize that the Chinese have access to supply chains that provide a greater variety of products at cheaper wholesale prices. Consequently, the benefit to a Malawian from adding a Chinese migrant to his personal network is greater than the benefit to a Chinese migrant from adding a Malawian to his network.

Creating a new network connection incurs a cost in terms of the time investment needed to establish the relationship, cultivate sufficient trust, and build confidence in each other. The expected time cost of adding j to i's network is $\hat{N}_{ij}$. There can be a bias in this estimate of the connection cost, as we expect both Malawians and Chinese migrants to have poor information about how personal connections are established with members of the other group.[6]

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[6] For the Malawian entrepreneurs, in particular, the considerable cultural divide between the two groups is expected to create a perception that the cost to forging network connections with specific

This disutility of time spent is mitigated by the extent to which each individual in-group i has a positive attitude toward members of group j.

The general attitude of i toward members of group j is expressed as A_{ij}. In other words, an hour spent with a new acquaintance who is a member of a group viewed with a favorable attitude is less costly than spending an hour with a new acquaintance who is recognized as a member of a group viewed in a less favorable way. The net value of i's network is given by V_i, and one's willingness to spend time with a member of the other group is increasing in $V_i(j \cup N_i) - V_i(N_i)$.

Within this model we consider two potential ways positive and cooperative contact influences individual attitudes and behavioral intentions of our participants. The first way is via a preference-based shock in the form of pleasant and cooperative contact on an individual in-group i's general attitude toward members of the other group j, A_{ij}. When the dominant influence of contact is via its effect on mitigating preference-based bias toward the other group, we have the following three hypotheses:

> H1. *Malawians' attitude toward Chinese migrants under actual contact*: Actual contact of a pleasant and cooperative nature between Malawian shopkeepers and their Chinese counterparts will improve local Malawian shopkeepers' attitude toward Chinese migrants.

> H2. *Malawians' attitude toward Chinese migrants under imagined contact*: Imagined contact of a pleasant and cooperative nature between Malawian shopkeepers and their Chinese counterparts will improve local Malawian shopkeepers' attitude toward Chinese migrants.

> H3. *Chinese migrants' attitude toward Malawians under actual contact*: Actual contact of a pleasant and cooperative nature between Malawian shopkeepers and their Chinese counterparts will improve Chinese migrants' attitude toward local Malawians.

Chinese entrepreneurs is very high, as the Chinese entrepreneurs come from a high-context culture in which *guanxi* plays an important role (Weitzman and Xu 1994; Wong and Chan 1999). Davies (1995) defined *guanxi* as "the social interactions within the network place and its members [that is] the equivalent of an infinitely repeated game with a set of people they know" (22). The general view is that the role of guanxi in forging network connections among Chinese entrepreneurs is not well understood among nonethnic Chinese entrepreneurs (Wong and Chan 1999) and that effectively tapping into and mastering the role of *guanxi* in relational contracting is being perceived as requiring significant investment (Fan 2002). Lacking knowledge of the costs of forming network connections with specific Chinese entrepreneurs, Malawian entrepreneurs make decisions based on the popular perception that the investment needed to forge network connections with the average Chinese entrepreneur will be high. Actual contact that is pleasant and cooperative leads to Malawian entrepreneurs updating their information set and reduces the cost to Malawian entrepreneurs of finding out about their Chinese counterparts.

Our assumption of asymmetry in the net benefits to each group's profitability from adding a member of the other group to their personal network implies that a positive shock to the attitudes of the Malawians will increase their willingness to spend time with a Chinese migrant but that the reverse may not hold. Accordingly, when the dominant influence of contact is via its effect on mitigating preference-based bias toward the other group, we have the following two hypotheses:

> H4. *Malawians' willingness to spend time with Chinese migrants under actual contact*: Actual contact of a pleasant and cooperative nature between Malawian shopkeepers and their Chinese counterparts will increase local Malawian shopkeepers' willingness to spend time with Chinese migrants.

> H5. *Malawians' willingness to spend time with Chinese migrants under imagined contact*: Imagined contact of a pleasant and cooperative nature between Malawian shopkeepers and their Chinese counterparts will increase local Malawian shopkeepers' willingness to spend time with Chinese migrants.

Meanwhile, we do not have confidence in finding evidence in favor of the next hypothesis:

> H6. *Chinese migrants' willingness to spend time with Malawians under actual contact*: Actual contact of a pleasant and cooperative nature between Malawian shopkeepers and their Chinese counterparts will increase Chinese migrant shopkeepers' willingness to spend time with local Malawians.

An alternative way in which positive and cooperative contact can influence attitude and behavioral intentions is through the adjustment of informational biases on the time costs to forge network connections. If the adjustment of informational biases is the dominant pathway of contact, then we would expect to observe no improvement in the attitudes of participants postcontact and, hence, to fail to find evidence in support of hypotheses H1–H3.

If the dominant influence of contact is via its effect on mitigating informational bias, we also expect a differential effect by actual and imagined contact treatments. Actual contact involves a previously unexperienced type of interaction with someone from the other group, and therefore this should lead to the gathering of new information. In contrast, imagined contact only allows one to project their prior belief of the degree of difficulty in establishing new connections with a member of the other group. As a result, we expect actual contact to reduce the expected necessary time investment, to find evidence in support of H4—and for that estimate to remain unchanged after imagined contact—and to fail to find evidence in support of H5. Again, due to the fact

that there is no net benefit, in terms of profit, to the Chinese from adding a Malawian shopkeeper to their network, even if informational biases are reduced, we expect to fail to find evidence to support H6.

As we are ultimately concerned with the ability of positive and cooperative contact interventions to generate more permanent benefits, we test whether the hypothesized contact (actual and imagined) effects persist over a period of time. We do so by following up with our participants and measuring their general attitude toward and willingness to spend time with the other group 10 days after each experimental session. We test the following hypothesis:

> H7. *Persistence of contact effects*: Any improvement in attitude or increase in willingness to spend time resulting from actual or imagined contact will be stable over time.

IV. Experimental Designs

A. Experiments 1 and 2: Actual Contact

A total of 60 indigenous (local) Malawians and 60 Chinese migrants participated in the experiments for monetary compensation.[7] We decided this sample size through a power analysis (Cohen 1992) to ensure 80% power to detect an effect size of 0.74 at the significance level of .05. We based our estimate of the effect size in Pettigrew and Tropp's (2006) meta-analysis result that the mean effect size for experiments on the contact hypothesis is 0.7.

Table 1 provides summary statistics for all participants. To recruit the Malawian participants for the actual contact experiments, recruiters identified markets and other areas with a large number of shops. Within each such area, the recruiters selected shops based on location with the goal of recruiting Malawian participants from shops as distant as possible from one another. Participants were told that they would be participating in an experiment lasting up to 1.5 hours that would involve a survey and a simple, pleasant task.

To gain access to the Chinese migrant population, we worked closely with the Community of Chinese Businessmen, Malawi. We identified six community leaders who assisted our recruiting efforts by disseminating basic information about the experiments to the community. Participants were told that they would be participating in an experiment taking up to 1.5 hours that would involve a survey and a simple, pleasant task. In appendix 1 (appendixes 1 and

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[7] When recruiting participants, we required all participants to be shopkeepers or shop owners. All Malawian participants were such, and 55 out of the 60 Chinese participants were currently such. The remaining five participants had past experience as shopkeepers in Malawi and reported that members of their immediate family were still shopkeepers. Among them, one participated in the control group and four in the treatment group.

TABLE 1
SUMMARY DEMOGRAPHIC STATISTICS FOR STUDY PARTICIPANTS IN EXPERIMENTS 1–3

	Number of Subjects	Female	Secondary School Graduate	Average Age (in Years)
Malawian group:				
Experiment 1 (actual contact):				
Treatment	30	19	27	30.6
Control	30	15	22	29.8
Experiment 3 (imagined contact):				
Treatment	30	7	20	35.9
Control	30	17	24	28.4
Chinese group:				
Experiment 2 (actual contact):				
Treatment	30	9	24	34.6
Control	30	8	27	36.7

2 are available online), we provide choropleth maps with detailed explanations on the spatial distribution of our participants.

We employed a randomized experimental design with a treatment to induce actual pleasant and cooperative contact. Participants received 5,000 Malawian kwacha (K) as a show-up fee and another K 2,000 as a transportation fee at the end of their session (US$1 ≈ K 390 at the time of the study).

We would normally employ a financially incentivized task to make the benefits of cooperation—and the truthful revelation of private information—more salient. However, the vast discrepancy between the Malawian and Chinese participants' incomes makes creating a financial incentive scheme problematic. An effective incentive scheme would have required a choice between either a largely more appropriate absolute payment scale to the Chinese or a largely more appropriate payment proportional to income levels of the Malawians. Therefore, the questions we asked were not incentivized, as we believe that adopting inequitable incentives would generate strong asymmetric influences on collected measures. No incentivized task would simultaneously give all participants a strong incentive to tell the truth while not affecting our measures of attitude and behavioral intent. With this being said, Gneezy and Rustichini (2000) show that intrinsic motivation can be more effective than an underscaled monetary incentive scheme in experiments. Providing different levels of payments to the Malawians and Chinese could have mitigated this problem but was not an option. The Chinese community leaders explicitly requested full transparency regarding the payment structure in front of all participants to avoid fueling what was already perceived as a tense situation between the Chinese and Malawian sides.

The joint experiment consisted of six sessions (two per day) conducted over July 5–7, 2014. All sessions were held in the same classroom. The first three

sessions constituted the control group and the latter three the treatment group. In each session, the Malawian and Chinese participants were randomly paired to form dyads. As a result, half of the dyads were randomly selected into a treatment group, in which they engaged in an actual contact event with their dyad partner, and half were randomly selected into a control group, in which they did not engage in actual contact with their dyad partner.

A session proceeded as follows: each dyad was seated side by side at a desk. Each participant was given a name card with his or her family name (e.g., "Banda" and "Ming," respectively). Once seated, participants in each dyad were instructed to exchange name cards and pronounce their own last name clearly so that each participant could learn the name of their counterpart. After these introductions, two project associates, one Malawian and one Chinese, read the instructions aloud, section by section, first in Chichewa and then in Mandarin. To address potential concerns about Hawthorne effects, we aligned the degree to which we revealed the study's purpose in the baseline and treatment sessions. We then only consider differences in responses between treatment and baseline and not the response levels.

Each dyad was then asked to complete two jigsaw puzzles. The Chinese and the Malawian participants were both unfamiliar with jigsaw puzzles. We believe that this created a level playing field between both groups of participants. We used the following procedure to manipulate the amount of contact between the treatment and the control groups. We gave two comparable jigsaw puzzles per dyad. In the treatment group, each dyad was asked to jointly solve the puzzles one after the other, with the order randomly assigned. In the control group, each dyad was asked to solve both puzzles as well; however, in this case each of the members was randomly assigned one of the puzzles to solve individually. All the participants were given a maximum of 1 hour to complete the jigsaw puzzle task.

The project associates observed that participants universally found working on the puzzles enjoyable and that in the actual contact treatment cooperation on their part helped them achieve a common goal. The experimental setup further fostered cooperation, as the puzzles were large enough that handing and asking each other for puzzle pieces and pointing out where pieces might fit into parts the other person had completed was the most efficient way to tackle the task.

Participants in the actual contact treatment were allowed to quietly communicate with their dyad partners. Participants in the baseline treatments were not allowed to communicate. No communication was allowed between dyads in both treatments. Almost all of the information communicated within actual contact dyads was nonverbal based on personal observation of the experimenter leading the sessions. This was reinforced by the language barriers between the

two groups in our study. The few exceptions in terms of verbal communication were members asking for puzzle pieces or inquiring whether the dyad member had seen a piece with a specific color and/or pattern.

After the jigsaw puzzle task, procedures between the baseline and actual contact treatments again coincided. The participants completed a short survey that included demographic and socioeconomic questions and our key question to assess a participant's attitude and willingness to spend time with members of the other group. We provide the complete questionnaire in appendix 2. Here we provide excerpts of our two key questions for the local Malawians (the key questions for Chinese participants are almost identical except that the target group refers to local Malawians):

> Circle the word that best sums up your thoughts about Chinese migrants in Malawi:
>
> 1. My general attitude toward Chinese migrants in Malawi is
>   very positive   positive   neutral   negative   very negative
> 2. If I could, I would enjoy spending my spare time with Chinese migrants.
>   very true   true   neutral   untrue   very untrue

In experiment 1, Malawian actual contact, all Malawian participants provided responses to both questions. In experiment 2, Chinese actual contact, two Chinese participants did not provide a response to the first question, and another Chinese participant did not provide a response to the second question.

We coded responses to these questions using a 5-point Likert scale (1 = very negative/untrue, 3 = neutral, 5 = very positive/true) so that higher values represent more positive attitudes and more willingness to spend time with the target group.

B. Experiment 3: Imagined Contact

A total of 60 Malawian shopkeepers participated in the experiment for cash compensation. Although these participants were different individuals from those who participated in experiments 1 and 2, they were recruited using the same strategy used for the Malawian participants in experiments 1 and 2.

The experiment employed a randomized design with a treatment to simulate imagined pleasant and cooperative contact. Participants received K 5,000 as a show-up fee and another K 2,000 as a transportation fee at the end of their session (US$1 ≈ K 460 at the time of the study). The experiment consisted of six sessions (two per day) conducted over November 2–4, 2014. Again, the

first three sessions were used to create a control group and the latter three to create a treatment group (30 participants per group).

A session proceeded as follows. Each participant was seated at a desk in a classroom similar to the one used in experiments 1 and 2. They were given instructions to not communicate among themselves for the duration of the session. Then participants were read a story about climbing Mount Mulanje (one of the two most famous natural sights in Malawi and a popular destination for hiking/climbing among Malawians and Chinese alike) with a shopkeeper they met for the first time at the foot of the mountain. Our script described the interaction with the shopkeeper as enjoyable and emphasized the cooperative nature of the interaction required to reach the common goal. We used the following procedure to manipulate imagined contact: the participants were asked to either envision a Malawian (control group) or Chinese (treatment group) shopkeeper as their travel companion. During the reading of the script, several breaks were provided for visualization. The participants were then asked details about the script that was read out to them, which served as a manipulation check (i.e., whether the participants in each condition visualized the correct travel companion) that all participants successfully passed. The participants then completed a series of compliance questions about what they had visualized (see app. 2 for the detailed materials to manipulate imagined contact) and finally the same survey tool as used in the actual contact experiment. All the participants provided responses to the two key questions.

C. Follow-Up Surveys

We conducted follow-up surveys for all three experiments via phone. In all cases, the project associates called participants exactly 10 days after the date of their initial participation. The follow-ups were comprised of a survey in which a subset of the questions from the initial participation were asked again, including our key questions of interest regarding attitude toward the other group and willingness to spend time with a member of the other group. We obtained follow-up responses for all 120 Malawian participants and 57 out of the 60 Chinese participants (of the three Chinese participants who could not be reached to provide follow-up responses, two were in the treatment group and one in the control group).

V. Results

Actual contact had different effects for the local Malawians and the Chinese migrants. Actual contact provided a significant increase in Malawians' willingness to spend time with a Chinese migrant but did not improve their attitude

toward Chinese migrants. In contrast, actual contact did not increase Chinese migrants' willingness to spend time with local Malawians. However, their attitude toward local Malawians did improve. Both of the observed initial impacts persisted for at least 10 days. The imagined contact intervention was not successful. There was no difference between control and treatment responses by local Malawians to questions of either attitude or willingness to spend time.

We start by presenting histograms for the responses to the attitude and behavior measures. Figure 1 is a 2 × 4 array of histograms of the local Malawian responses in experiments 1 and 3. The rows of the array correspond to the two experiments: the top row for the actual contact experiment, experiment 1, and the bottom row for the imagined contact experiment, experiment 2. The left half of the array corresponds to the attitudinal question and the right half to the response to the behavioral intention instrument. Each histogram reports the response counts for the initial responses (black bars) and the follow-up responses (light gray bars) collected 10 days later.

First, in responding to the general attitude question, the Malawians in the actual contact experiment tended to provide high responses, indicating a positive attitude, but there was no apparent difference between the distributions of those in the treatment group and those in the control group. The distribution of the follow-up responses is identical to the initial responses, but this is a mere coincidence as there were subjects who changed their responses. In the imagined contact experiment, the distribution of the responses of those in the treatment group appears to be more concentrated on higher responses than in the control group. Shortly we will see this treatment effect is only marginally significant. Further, this treatment effect erodes in the follow-up 10 days later.
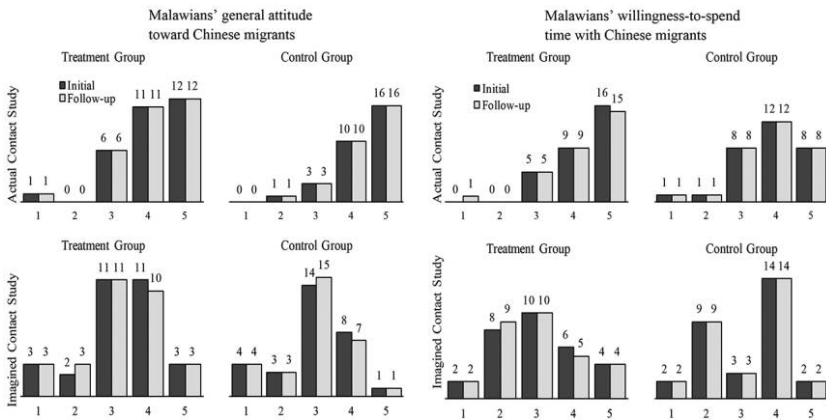

Figure 1. Response histograms for the Malawian participants in experiment 1 (actual contact) and experiment 3 (imagined contact) and follow-up surveys 10 days later.
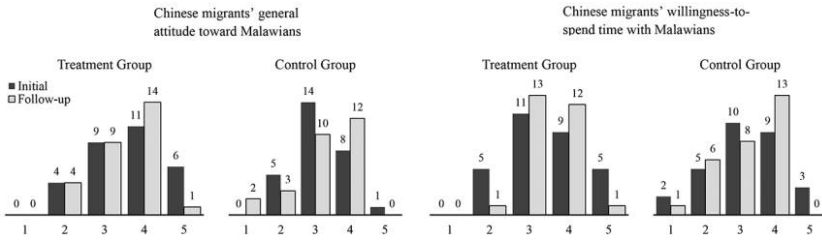
Figure 2. Response histograms for the Chinese participants in experiment 2 (actual contact) and the follow-up survey 10 days later.

Next, we consider the Malawians' responses in both experiments 1 and 3 to the question of willingness to spend time. In the actual contact experiment, the distribution of the initial treatment groups' responses is more concentrated on the higher responses. On the other hand, there is no apparent difference between the initial responses of the treatment and control groups in the imagined contact experiment. Further, in all four cases, the distribution of follow-up responses closely matches that of the corresponding initial responses. Thus, in the case of the actual contact, this is evidence that the contact effect sustained for at least 10 days.

Figure 2 presents the 1×2 array of histograms for the Chinese migrants' responses to both questions in the actual contact experiment. For the attitude question, the responses in the treatment were concentrated on higher, more positive levels. This more positive attitude was muted in the follow-up. For the willingness to spend time question, the treatment and control distributions are quite similar.

Next, we formally test our hypotheses. We first examine treatment effects in the initial experiments. In table 2 we compare the treatment and control responses within each experiment and group by comparing their means with a one-sided t-test for which the alternative hypothesis is that the mean treatment response is higher than the mean control response.[8] The alternative hypothesis is consistent with a positive effect of contact. We also conduct a one-sided Wilcoxon rank sum test that the distribution of responses is the same for the treatment and control groups versus the alternative that the response distribution for the control group weakly first-order stochastically dominates that of the treatment group.

We first consider whether contact positively affected attitude in the top part of the table. For local Malawians, we find no effect on attitude from actual

[8] Our two contact interventions were designed to be cooperative and pleasant and were evidently so as puzzle pieces were collected as souvenirs by some participants following the activities. This satisfies the basic tenets of contact theory and consequently makes the one-sided alternatives consistent with the theoretical contentions underlying our hypotheses.

TABLE 2
HYPOTHESIS TESTS FOR CONTACT EFFECTS ON GENERAL ATTITUDE TOWARD AND WILLINGNESS
TO SPEND TIME WITH OTHER GROUP IN EXPERIMENTS 1–3

	Malawian		Chinese
	Actual	Imagined	Actual
	A. General Attitude toward Other Group		
Control:			
Responses	30	30	30
Mean	4.37	2.97	2.90
Standard deviation	(.81)	(1.03)	(1.30)
Treatment:			
Responses	30	30	28
Mean	4.10	3.30	3.63
Standard deviation	(.96)	(1.09)	(.96)
Difference:			
Mean	−.27	.33	.73
t-statistic	−1.16	1.22	2.49***
p-value	.89	.11	.01
Wilcoxon rank sum statistic	−1.15	1.32*	2.27***
p-value	.88	.09	.01
	B. Willingness to Spend Time with Other Group		
Control:			
Responses	30	30	30
Mean	3.83	3.17	3.07
Standard deviation	(.99)	(1.15)	(1.31)
Treatment:			
Responses	30	30	29
Mean	4.37	3.07	3.47
Standard deviation	(.76)	(1.14)	(.97)
Difference:			
Mean	.54	−.17	.40
t-statistic	2.34***	−.34	1.34*
p-value	.01	.63	.09
Wilcoxon rank sum statistic	−2.20**	.45	−1.01
p-value	.01	.67	.16

Note. "Actual" and "Imagined" refer to the actual contact and imagined contact experiments, respectively. For Malawian participants, "Other Group" refers to Chinese migrants in Malawi. For Chinese participants, "Other Group" refers to local Malawians.
* $p < .10$.
** $p < .05$.
*** $p < .01$.

contact. In fact, the treatment mean is slightly lower. We do find marginal support for improved attitude when there is exposure to imagined contact; the treatment mean response is 0.33 higher in this case. This difference is marginally significant; the *p*-value is approximately 10% for both tests. We find the strongest evidence of positive attitude change for Chinese migrants exposed to actual contact. The mean treatment response is 0.73 higher than the mean control response. In this case, we reject both equal means of response and equal distribution of responses at the 1% level of significance.

TABLE 3
RESULTS OF ORDINARY LEAST SQUARES REGRESSIONS ANALYSES OF THE GENERAL
ATTITUDE TOWARD OTHER GROUP IN EXPERIMENTS 1–3

	Malawian		Chinese
	Actual (1)	Imagined (2)	Actual (3)
Contact	−.13	.49	.82**
	(.21)	(.32)	(.35)
Female	−.23	.12	.07
	(.18)	(.33)	(.30)
High school graduate	.21	−.22	.51
	(.23)	(.30)	(.52)
Age	−.03*	.00	−.03
	(.02)	(.02)	(.03)
Monthly income	−.06***	−.01	.00
	(.02)	(.04)	(.04)
Number of children	.11	−.05	.39
	(.07)	(.07)	(.26)
Constant	5.21	3.20***	2.95***
	(.56)	(.70)	(.87)
Observations	60	60	52
R^2	.27	.06	.19

Note. Col. 1 = experiment 1, Malawian participants' general attitude toward Chinese migrants in Malawi after actual contact; col. 2 = experiment 3, Malawian participants' general attitude toward Chinese migrants in Malawi after imagined contact; col. 3 = experiment 2, Chinese participants' general attitude toward Malawians after actual contact. For "contact," 0 = control and 1 = treatment. For "female," 0 = male and 1 = female. For "high school graduate," 0 = did not graduate high school and 1 = graduated high school. Monthly income is measured in 10,000 MWK. Robust standard errors are in parentheses.
* $p < .10$.
** $p < .05$.
*** $p < .01$.

Are these effects robust to controlling for other factors that could affect attitude and behavioral intentions? Recruiting for our experiments was difficult, and we could not obtain demographic information on participants in advance. Accordingly, the best design choice was to randomly assign sessions to treatments. This left our samples unbalanced with respect to potentially important variables such as gender, age, family composition, and education. We control for variations in our samples by pooling the data from the treatment and control sessions for each experiment. Then we conduct ordinary least squares regressions of these variables, along with a treatment dummy, on the individual responses to our two questions.[9] We report these results, with inferences conducted using robust standard errors, in tables 3 and 4. Regression results confirm our hypothesis tests regarding the impact of actual and imagined contact

[9] Note the number of observations for the Chinese study regressions is only 52 due to some nonresponses in the poststudy survey.

TABLE 4

RESULTS OF ORDINARY LEAST SQUARES REGRESSION ANALYSES OF THE
WILLINGNESS TO SPEND TIME WITH OTHER GROUP IN EXPERIMENTS 1–3

| | Malawian | | Chinese |
	Actual (1)	Imagined (2)	Actual (3)
Contact	.66***	.15	.45
	(.21)	(.30)	(.36)
Female	−.66***	−.02	−.34
	(.22)	(.32)	(.53)
High school graduate	.63**	.31	.35
	(.27)	(.33)	(.52)
Age	−.02	.01	.02
	(.02)	(.02)	(.03)
Monthly income	−.04*	.05**	−.04*
	(.02)	(.02)	(.02)
Number of children	.08	−.16**	−.20
	(.06)	(.07)	(.19)
Constant	4.32***	2.84***	2.41***
	(.46)	(.71)	(1.04)
Observations	60	60	52
R^2	.37	.12	.10

Note. See table 3 note for details.
* $p < .10$.
** $p < .05$.
*** $p < .01$.

on attitudes. Inspection of the treatment dummy coefficients in table 3 reflects similar-sized treatment effects as found in simple averages calculations.

We summarize our first two results. Result 1: Local Malawians' attitude toward Chinese migrants is not affected by actual or imagined contact. This finding does not support hypotheses H1 and H2. Result 2: Chinese migrants' attitude toward local Malawians is positively affected by actual contact. This finding supports hypothesis H3.

Now we turn our attention to test the treatment effects of actual and imagined contact on the willingness to spend time with members of the other group. We report the relevant means and hypothesis tests in the lower half of table 2. First, consider the effects for local Malawians. In the actual contact experiment, the mean response is 4.37 for the treatment group and 3.83 for the control group, which provides evidence in favor of the alternative ($p < .01$). We reach a similar conclusion with the Wilcoxon rank sum test. In the imagined contact experiment, there is little difference in mean response levels of the control and treatment groups. The treatment group mean is 3.07, and the control group mean is 3.17. Correspondingly, we find evidence in favor of the null with both the t-test and the Wilcoxon rank sum test. For the migrant Chinese in the actual contact experiment, the treatment response mean is about .40 higher than that of the control group; this is only marginally significant in the one-sided t-test

($p = .09$) and insignificant with the Wilcoxon rank sum test ($p = .16$). Notice that the weak evidence of increased Chinese migrants' willingness to spend time with local Malawians, relative to the reverse, is consistent with the implications of our model assuming asymmetric benefits to entrepreneurial profits.

Regression results confirm our hypothesis tests regarding the impact of actual and imagined contact on behavioral intentions. Inspection of the treatment dummy coefficients in table 4 reflects treatment effects similar in size to those found in simple average calculations.

We summarize our next two results. Result 3: Local Malawians' willingness to spend time with Chinese migrants is positively affected by actual contact but not affected by imagined contact. This finding supports hypothesis H4 but does not support hypothesis H5. Result 4: Chinese migrants' willingness to spend time with local Malawians is not affected by actual contact. This finding does not support hypothesis H6.

Last, we test whether the changes in attitude and behavioral intentions resulting from contact (actual and imagined) were sustainable for the 10 days between contact and our follow-up. In table 5, we report the means and standard deviations of responses from our initial experiments and their follow-ups. We also report the counts of individual responses that increased, remained the same, and decreased from the initial study to the follow-up. We provide two tests for response stability. First, we report a one-sided paired t-test for which the null is the initial and the response means are the same versus the alternative that the initial response is higher. Second, we report the similar nonparametric Wilcoxon matched-pair signed test.

The statistics and hypothesis tests reflect strong stability in responses across experiments, treatments, and groups. One of our main research questions is, How persistent are successful contact interventions? Accordingly, we focus on the two positive treatment effects. With exogenous exposure to actual contact, the local Malawians' willingness to spend time with migrant Chinese mean response was initially 4.37, and this decreased slightly to 4.23. Twenty of the respondents did not change their response, seven reduced their response, and three even increased their response. With this stability, it is not surprising that we fail to reject the null hypotheses of both tests. With exogenous exposure to actual contact, Chinese migrants' mean response to the attitude question was 3.63, and the follow-up was 3.43. This nominal degradation in attitude is not significant according to our hypothesis test but is still concerning nonetheless.

Cautiously, we can offer our final result. Result 5: The positive impact resulting from actual contact on local Malawians' willingness to spend time with Chinese migrants and Chinese migrants' attitude toward local Malawians persists for at least 10 days.

	Malawian				Chinese	
	Actual		Imagine		Actual	
	Treatment (1)	Control (2)	Treatment (3)	Control (4)	Treatment (5)	Control (6)
A. General Attitude toward Other Group						
Initial:						
Observations	30	30	30	30	30	28
Mean	4.10	4.37	3.30	2.97	3.63	2.90
Standard deviation	(.96)	(.81)	(1.09)	(1.03)	(.96)	(1.30)
Follow-up:						
Observations	30	30	30	30	28	27
Mean	4.10	4.37	3.23	2.93	3.43	3.24
Standard deviation	(.96)	(.81)	(1.10)	(1.02)	(.79)	(.91)
Count:						
Follow-up > initial	10	6	0	0	4	6
Follow-up = initial	9	17	29	29	16	19
Follow-up < initial	11	7	1	1	8	2
Paired t-test:						
t-statistic	.00	.00	−1.00	−1.00	−1.32	1.19
p-value	.50	.50	.84	.84	.20	.88
Matched pairs signed rank test:						
z-statistic	−.16	−.25	1.00	1.00	−1.21	1.78
p-value	.44	.40	.84	.84	.23	.96
B. Willingness to Spend Time with Other Group						
Initial:						
Observations	30	30	30	30	30	29
Mean	4.37	3.83	3.07	3.17	3.47	3.07
Standard deviation	(.77)	(.99)	(1.14)	(1.15)	(.97)	(1.31)
Follow-up:						
Observations	30	30	30	30	27	28
Mean	4.23	3.83	3.00	3.17	3.48	3.21
Standard deviation	(.97)	(.99)	(1.15)	(1.15)	(.64)	(.90)
Count:						
Follow-up > initial	3	0	0	0	5	9
Follow-up = initial	20	30	29	30	16	13
Follow-up < initial	7	0	1	0	6	6
Paired t-test:						
t-statistic	−.81	. . .	−1.00	.00	.00	.76
p-value	.21	. . .	.84	.50	.50	.88
Matched pairs signed rank test:						
z-statistic	−1.15	. . .	1.00	.00	−.20	.94
p-value	.13	. . .	.84	.50	.42	.83

Note. Cols. 1, 2 = experiment 1, Malawian participants' general attitude toward Chinese migrants in Malawi after actual contact; cols. 3, 4 = experiment 3, Malawian participants' general attitude toward Chinese migrants in Malawi after imagined contact; col. 5, 6 = experiment 2, Chinese participants' general attitude toward Malawians after actual contact. Panel A shows an overview of participants' responses regarding their general attitude toward the other group. Panel B shows an overview of participants' responses regarding their willingness to spend time with the other group. "Initial" = responses reported immediately after the experiments; "Follow-up" = responses reported 10 days after the experiments.

VI. Discussion

Most of the economics literature on discrimination has focused on employer discrimination (see, e.g., Bertrand and Mullainathan 2004; Kroft, Lange, and Notowidigdo 2013; Eriksson and Rooth 2014) or, more recently, customer discrimination (Bar and Zussman 2017). We differ from this literature in that we have examined discrimination between entrepreneurs. In this arena, we formulated a behavioral model of how entrepreneurs extend their social networks and an experiment that predicts alternative responses for whether the mechanisms behind effective contact interventions result from changing preferences or resolving informational biases. Our experimental results are largely consistent, with informational bias being the dominant channel, but there is an unexplained asymmetric activation of the preference channel. In this final discussion, we first explore potential explanations of the asymmetric attitudinal effect, then turn our attention to discuss the future of imagined contact in light of our null results, and then discuss the impact of our results for the larger China in Africa set of initiatives.

To what extent do we expect the preference-based or informational bias channel to be dominant in our particular setting, and, hence, to what extent are our results consistent with what we predicted? As Bar and Zussman (2017) have recently emphasized, it is notoriously difficult to disentangle these two channels, so we refrain from taking a strong stand, but we believe that, in our setting, informational bias is likely to be an important channel.

The nature of the relationship between the Chinese and Malawians is multilayered, so it is difficult to completely rule out preference-based discrimination at some level. In this respect, it is not even clear who is the in-group and who is the out-group in the Allport (1954) sense. The Chinese are a socially marginalized minority and, in this sense, may be considered the out-group. However, they are also economically advantaged relative to the Malawians and, in a business sense, can be considered the privileged in-group.

To the extent that preference-based discrimination is operating, our model predicted that actual contact would improve the attitudes of both groups to each other (H1, H3). But, if preference-based discrimination is operating through relative social status, the asymmetric results for attitude change following actual contact might reflect that, as the socially marginalized group, the Chinese may be more accommodating of the majority-status Malawians (Guinote, Brown, and Fiske 2006). If so, for the minority-status Chinese, actual contact with the Malawians might more readily translate into attitude change toward the other group than for the majority-status group, because the minority-status group is more willing to accommodate the majority-status

group. This is consistent with findings from cross-sectional contact studies in the psychology literature that are suggestive of actual contact changing the attitudes of minority-status groups more readily than majority-status groups (see, e.g., Dixon et al. 2010). Nielsen and Smyth (2011) reached the same conclusion in their study of rural-urban migrants in China, in which rural-urban migrants were the minority-status group.

An explanation for the asymmetric results on attitude change, consistent with preference-based discrimination, may lie with social identity theory. Minority-status groups have been shown to have a stronger sense of social identity (Goette, Huffman, and Meier 2006). This reflects social identity threat; minority groups who feel their status as a group is threatened work harder to overcome this threat, and this draws them closer together. Social identity theory stresses the need for an individual to have a positive social identity and that individuals will strive to maintain this state. Hence, socially marginalized groups will be more accommodating of the majority to ensure that a positive social identity is maintained.

We now turn our attention to perspectives on the potential of imagined contact interventions. Our results for the imagined contact treatment are largely what economists might expect, irrespective of the channel. If the information channel dominates, imagined contact can be thought of as not providing any new information but rather reinforcing preexisting prejudices in terms of the difficulty in establishing new contacts. If the preference-based channel is dominant, one would expect an improvement in attitudes, but the effect from imagined contact alone may be very weak and difficult to detect. Given the enormous potential for scalability due to its low cost, we make some suggestions for improvements of the imagined contact treatment that could plausibly get it to work better in the future.

First, there is evidence in other contexts that television shows can lead to positive economic outcomes. For example, La Ferrara, Chong, and Duryea (2012) found that soap operas that portrayed small families had a positive effect on lowering fertility rates in Brazil. Jensen and Oster (2009) found that exposure to cable television increased female socioeconomic status and the education outcomes of their children in rural India. Kearney and Levine (2014) found that a series of reality television shows in the United States focused on teenage pregnancies increased awareness of contraception use among teenagers and led to a reduction in teen births. La Ferrara, Chong, and Duryea (2012) note "that programs targeted to the culture of the local population have the potential of reaching an overwhelming amount of people at very low costs and could thus be used by policy makers to convey important social and economic messages [including] the rights of minorities" (29). One possible policy

intervention, building on the notion of imagined contact, may be introducing sympathetic characters of different ethnic groups to popular television shows. This might work better than a single imagined contact treatment, as in our study. With watching television, one would expect the preference-based channel to be more important and the effect of attitudes of a television serial to be stronger because the imagined component is embedded in a broader context.

Second, that our results indicate that imagined contact alone might not be enough to have a positive effect suggests that a continuum of contact strategies may be needed (Crisp and Turner 2012). As part of such an approach, imagined contact might be applied in the first stage and actual contact in the second stage. This sees imagined contact as part of a larger solution that comprises multiple interventions. In this respect, as Crisp and Turner (2012) put it: "A comprehensive solution to the problem of prejudice will involve multifocused interventions that tackle the complex and multilayered motivational, ideological, economic, and social contributors to this most pervasive of social problems. But just as a purely cognitive focus is not enough, nor should we ignore the power and potential of social cognitive approaches in helping us tackle these problems" (170).

Finally, a backdrop to Chinese migration to Africa is China's own political ambition on that continent. China has poured large amounts of foreign aid into Africa, which is tied to expanding its strategic interests there. China wants to work with African nations to promote the notion of a Chinese development model, as an alternative to the Washington Consensus promarket approach to development in Africa (Davies 2008; Friedman 2009).

How do our results speak to China's broader economic ambitions in Africa? China's entry into Africa is part of a long-term strategy. However, there is mistrust in some African nations about the true intent of the Chinese (Davies 2008), and such mistrust has the capacity to act as a barrier to broader acceptance of the Chinese model of development as an alternative to the Washington Consensus. This mistrust has been a source of African political forces pushing back against China's strategy. For example, in 2011, Michael Sata, the leader of the largest opposition party, Patriotic Front, made resistance against Chinese "exploitation" of Zambia's natural resources and workforce a key campaign platform (McGreal 2007; Palitza 2011).

Chinese shopkeepers, such as those recruited for the current study, are a significant component of the interface between the Chinese development model and everyday Malawians. If Malawian shopkeepers have more positive behavioral intentions toward their Chinese counterparts, they may be more likely to support the broader, higher-level development actions of the Chinese government. That actual contact facilitates change in the willingness of Malawians to

spend time with the Chinese shopkeepers—and that the change is stable—has important practical implications. Where mistrust and anxiety about the perceived true objectives of the Chinese exists, our results suggest that there is a foundation for addressing it.

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